UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/652,284	08/31/2000	Vi-En Choong	MBHB00-025	2923

7590 07/29/2003

ROBIN M. SILVA
FLEHR HOHBACH TEST ALBRITTON & HERBERT LLP
FOUR EMBARCADERO CENTER. SUITE 3400
SAN FRANCISO, CA 94111

EXAMINER
TRAN, MY CHAU T

ART UNIT	PAPER NUMBER
1639	

DATE MAILED: 07/29/2003

15

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/652,284	Applicant(s) CHOONG ET AL.	
	Examiner My-Chau T. Tran	Art Unit 1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 May 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,8-18,20-30,34,37-44,49-61,64-68,74 and 75* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,8-18,20-30,34,37-44,49-61,64-68,74 and 75* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *7 & 14* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/2/03 has been entered.

2. Applicant's amendment filed 5/02/03 in Paper No. 13 is acknowledged and entered. Claims 6-7, 19, 31-33, 35-36, 45-48, 62-63, 69-73, and 76-80 are canceled by the amendment. Claims 1-2, 34, 44, 74, and 75 are amended by the amendment.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 6/27/02 has been placed in the file and was not considered because no copies of the references were submitted. However, applicant has provided the copies of the references except those crossed-out by the examiner as duplication of art already cited. Accordingly, the examiner is considering the information disclosure statement submitted on 6/27/02 in Paper No. 7.

4. Claims 1-5, 8-18, 20-30, 34, 37-44, 49-61, 64-68, and 74-75 are pending.

Withdrawn Rejections

5. The previous rejections 35 USC 112, first paragraph, for claims 1-80 have been withdrawn in view of applicant's amendments of claims 1-2, 34, 44, 74, and 75 and cancellation of claims 6-7, 19, 31-33, 35-36, 45-48, 62-63, 69-73, and 76-80.

6. The previous rejections under 35 USC 102(e) as being anticipated by Kayyem et al. (US Patent 6,290,839 B1) for claims 1-2, 6-30, 33-46, 48-51, and 53-77 have been withdrawn in view of applicant's amendments of claims 1-2, 34, 44, 74, and 75.

7. The previous rejections under 35 USC 103(a) as being obvious over Kayyem et al. (US Patent 6,290,839 B1) in view of Roberts et al. (US Patent 5,958,791) for claims 3-77 have been withdrawn in view of applicant's amendments of claims 1-2, 34, 44, 74, and 75.

8. The previous rejections under 35 USC 103(a) as being obvious over Sosnowski et al. (US Patent 6,051,380) in view of Roberts et al. (US Patent 5,958,791) for claims 1-63 have been withdrawn in view of applicant's amendments of claims 1-2, 34, 44, 74, and 75.

9. Claims 1-5, 8-18, 20-30, 34, 37-44, 49-61, 64-68, and 74-75 are treated on the merit in this Office Action.

New Rejections – Necessitated by Amendment

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. The presently amended Claims 34 and 44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 34 and 44 are vague and indefinite because is an improperly written Markush claim. It is improper to use the term "comprises" in a Markush claim.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 64-68 are rejected under 35 U.S.C. 102(b) as being anticipated by Cozzette et al. (US Patent 5,200,051).

Cozzette et al. disclose an electrochemical assay procedures and a biosensors that determine the presence and/or concentration of biological species (analytes) of interest (col. 11, lines 62-65). The biosensor comprises a catalytic electrode (input electrode) and reference electrode (output electrode), an adhesion promoter layer overlaid on the biosensor, and a bioactive layer that is immobilized on the adhesion promoter layer, which bioactive layer is a receptor of the immunological analyte of interest (col. 12, lines 20-25; fig. 2). The immunoassays are exemplified wherein the substrate convertor is an enzyme that hydrolyzes the substrate. This hydrolyzed substrate can then undergo reactions, which produce changes in the concentration of electroactive species (dioxygen and hydrogen peroxide), which are

electrochemically detected with the biosensor, a ligand/ligand receptor-based (LLR-based) biosensor in this instance (col. 12, lines 7-16; fig. 14). The transduction of the analyte concentration into a processable signal is by electrochemical means, and these transducers may include amperometric, potentiometric, or conductimetric base sensors (col. 19, lines 31-56). Further, the type of electrical or electrochemical detection of claims 65-68 would be a choice as experimental design and is considered within the purview of the prior art. Therefore the method of Cozzette et al. anticipates the presently claimed method.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

16. Claims 64 and 74-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cozzette et al. (US Patent 5,200,051) and Ishikawa (US Patent 3,619,511).

Cozzette et al. disclose an electrochemical assay procedures and a biosensors that determine the presence and/or concentration of biological species (analytes) of interest (col. 11, lines 62-65). The biosensor comprises a catalytic electrode (input electrode) and reference electrode (output electrode), an adhesion promoter layer overlaid on the biosensor, and a bioactive layer that is immobilized on the adhesion promoter layer, which bioactive layer is a receptor of the immunological analyte of interest (col. 12, lines 20-25; fig. 2). The immunoassays are exemplified wherein the substrate convertor is an enzyme that hydrolyzes the substrate. This hydrolyzed substrate can then undergo reactions, which produce changes in the concentration of electroactive species (dioxygen and hydrogen peroxide), which are electrochemically detected with the biosensor, a ligand/ligand receptor-based (LLR-based) biosensor in this instance (col. 12, lines 7-16; fig. 14). The transduction of the analyte concentration into a processable signal is by electrochemical means, and these transducers may include amperometric, potentiometric, or conductimetric base sensors (col. 19, lines 31-56). Further, the type of electrical or electrochemical detection of claims 65-68 would be a choice as experimental design and is considered within the purview of the prior art.

The method of Cozzette et al. does not expressly disclose that it includes a multiplexor connected to a set of input electrodes and a demultiplexer connected to the set of output electrodes.

Ishikawa disclosed "[a] data handling system for effecting normalization of a number of signals of widely variable range, including a multiplexer that samples signals and a single gain

control amplifier for normalizing the signals and operating upon the sampled input signals to provide signals of optimum magnitude" (col. 1, lines 35-51). "[T]he normalized signals are then fed through a decoder or demultiplexer which is synchronized with the input multiplexer whereby the original input signals are readily available in normalized form." It is well known the output of the multiplexer provides each of the input signals in sequence on a single line (input electrodes) and these sequential or multiplexed input signals are fed to a gain control circuit from whence the output is fed to a decoder or demultiplexer which provides on lines (output electrodes) the outputs of the system in the form of normalized versions of inputs (col. 2, lines 27-33).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include a multiplexor connected to a set of input electrodes and a demultiplexer connected to the set of output electrodes as taught by Ishikawa in the apparatus of Kayyem et al. One of ordinary skill in the art would have been motivated to include a multiplexor connected to a set of input electrodes and a demultiplexer connected to the set of output electrodes in the apparatus of Kayyem et al. for the advantage of providing a data processing system that can handle or transmit a number of signals of widely varying range (Ishikawa: col. 1, lines 5-8).

17. Claims 1-2, 5, 8-18, 20-30, 34, 37-44, and 49-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cozzette et al. (US Patent 5,200,051) and Ishikawa (US Patent 3,619,511).

Cozzette et al. disclose an electrochemical assay procedures and a biosensors that determine the presence and/or concentration of biological species (analytes) of interest (col. 11, lines 62-65). The biosensor comprises a catalytic electrode (input electrode) and reference electrode (output electrode), an adhesion promoter layer (conjugated polymer) overlaid on the biosensor, and a bioactive layer that is immobilized on the adhesion promoter layer, which bioactive layer is a receptor of the immunological analyte of interest (col. 12, lines 20-25; fig. 2).). The substrate comprise of silicon, glass, or plastic (col. 25, lines 36-44). The electrode comprise of gold or platinum (col. 25, lines 2-8). A metal-substrate adhesive comprise of titanium (col. 25, lines 55-61). The biosensor comprise of three conductive electrodes (see fig. 2).

The apparatus of Cozzette et al. does not expressly disclose that it includes a multiplexor connected to a set of input electrodes and a demultiplexer connected to the set of output electrodes.

Ishikawa disclosed "[a] data handling system for effecting normalization of a number of signals of widely variable range, including a multiplexer that samples signals and a single gain control amplifier for normalizing the signals and operating upon the sampled input signals to provide signals of optimum magnitude" (col. 1, lines 35-51). "[T]he normalized signals are then fed through a decoder or demultiplexer which is synchronized with the input multiplexer whereby the original input signals are readily available in normalized form." It is well known the output of the multiplexer provides each of the input signals in sequence on a single line (input electrodes) and these sequential or multiplexed input signals are fed to a gain control circuit from whence the output is fed to a decoder or demultiplexer which provides on lines

(output electrodes) the outputs of the system in the form of normalized versions of inputs (col. 2, lines 27-33).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include a multiplexor connected to a set of input electrodes and a demultiplexer connected to the set of output electrodes as taught by Ishikawa in the apparatus of Kayyem et al. One of ordinary skill in the art would have been motivated to include a multiplexor connected to a set of input electrodes and a demultiplexer connected to the set of output electrodes in the apparatus of Kayyem et al. for the advantage of providing a data processing system that can handle or transmit a number of signals of widely varying range (Ishikawa: col. 1, lines 5-8).

18. Claims 3-4 rejected under 35 U.S.C. 103(a) as being unpatentable over Cozzette et al. (US Patent 5,200,051) and Ishikawa (US Patent 3,619,511) as applied to claims 1-2, 5, 8-18, 20-30, 34, 37-44, and 49-61 above, and further in view of Roberts et al. (US Patent 5,958,791).

Cozzette et al.

Ishikawa disclosed "[a] data handling system for effecting normalization of a number of signals of widely variable range, including a multiplexer that samples signals and a single gain control amplifier for normalizing the signals and operating upon the sampled input signals to provide signals of optimum magnitude" (col. 1, lines 35-51). "[T]he normalized signals are then fed through a decoder or demultiplexer which is synchronized with the input multiplexer whereby the original input signals are readily available in normalized form." It is well known the output of the multiplexer provides each of the input signals in sequence on a single line

(input electrodes) and these sequential or multiplexed input signals are fed to a gain control circuit from whence the output is fed to a decoder or demultiplexer which provides on lines (output electrodes) the outputs of the system in the form of normalized versions of inputs (col. 2, lines 27-33).

The apparatus of Cozzette et al. modified by Ishikawa does not expressly disclose that it includes an interdigitated output and input electrodes.

Roberts et al. discloses an apparatus that the output and input electrodes are interdigitated (Abstract; col. 6, line 10-13; col. 7, line 66-67 and continue to col. 8, line 1). Roberts et al. also teach that the reference electrode is comprised of silver/silver chloride (col. 23, line 17-18 and claims 15 and 40). The support substrate comprises ceramic (col. 18, line 12-20).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include an interdigitated output and input electrodes as taught by Roberts et al. in the apparatus of Kayyem et al. as modified by Ishikawa. One of ordinary skill in the art would have been motivated to include an interdigitated output and input electrodes in the apparatus of Kayyem et al. as modified by Ishikawa for the advantage of increasing signal detection such as increasing signal-to-noise ratio and decreasing ohmic signal losses (col. 8, line 2-10). The feature of interdigitation of the microelectrodes constitutes obvious variations in parameters that are routinely modified in the art. The art has shown that microelectrodes fabricated in an interdigitated array have inherent advantages in signal detection over more conventional electrode configurations (Robert: col. 8, line 2-37).

19. Claims 1-2, 5, 8-18, 20-30, 34, 37-44, and 49-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayyem et al. (US Patent 6,290,839 B1) and Ishikawa (US Patent 3,619,511).

Kayyem et al. discloses an apparatus for electrical and electrochemical detection of molecular interactions in a sample solution (abstract; col. 2, line 26-36). The apparatus comprise of a supporting substrate (fig. 1C, ref. #30; col. 2, line 42), a plurality of porous, polymeric (conjugated polymer) pads (fig. 1C, ref. #25; col. 2, line 28-29 and 49-50; col. 8, line 41-54), and a set of electrodes in contact with a plurality of porous, polymeric pads (fig. 1 (A-D), ref. #10 and 20; col. 2, line 28-29 and 42-43; col. 8, line 31-41). The electrodes are arranged to address a subset of test sites (fig. 1 (A-F); col. 2, line 40-42). Each output electrode is in electrochemical contact with an input electrode (col. 2, line 33-37). The linker (ref. #106, fig. 3A) is in contact with the polymeric pads (ref. #107, fig. 3A) and the probe molecules (ref. #100, fig. 3A) immobilized to the linker (col. 3, line 1-5; col. 6, line 4-13 and 39-46; col. 65, line 50-57). The apparatus further comprise of a reference electrode, a means for producing an electrical signal, a means for detecting changes in the electrical signal (col. 65, line 66-67 and continue to col. 66, line 1-9), and an electrolyte solution in contact with the polymeric pads (col. 2, line 27-31; col. 11, line 1-2). The molecular interactions between the immobilized probe molecules and target molecules are detected (col. 1, line 61-67 and continue to col. 2, line 1-2). The preferred electrodes are known in the art and include gold and platinum, which are known as conductive material (col. 8, line 7-17). It is also known in the art that electrodes are also comprise of an insulating material such as glass and the insulating material is the supporting substrate (col. 58, line 6-13; fig. 1 (A-E), ref. #30). The probe molecules are nucleic acids or peptides (col. 23, line

66-67 and continue to col. 24, line 1-5 and 26-65). The probes are covalently attached to the electrode by a variety of ways (col. 21, line 26-29).

The apparatus of Kayyem et al. does not expressly disclose that it includes a multiplexor connected to a set of input electrodes and a demultiplexer connected to the set of output electrodes.

Ishikawa disclosed "[a] data handling system for effecting normalization of a number of signals of widely variable range, including a multiplexer that samples signals and a single gain control amplifier for normalizing the signals and operating upon the sampled input signals to provide signals of optimum magnitude" (col. 1, lines 35-51). "[T]he normalized signals are then fed through a decoder or demultiplexer which is synchronized with the input multiplexer whereby the original input signals are readily available in normalized form." It is well known the output of the multiplexer provides each of the input signals in sequence on a single line (input electrodes) and these sequential or multiplexed input signals are fed to a gain control circuit from whence the output is fed to a decoder or demultiplexer which provides on lines (output electrodes) the outputs of the system in the form of normalized versions of inputs (col. 2, lines 27-33).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include a multiplexor connected to a set of input electrodes and a demultiplexer connected to the set of output electrodes as taught by Ishikawa in the apparatus of Kayyem et al. One of ordinary skill in the art would have been motivated to include a multiplexor connected to a set of input electrodes and a demultiplexer connected to the set of output electrodes in the apparatus of Kayyem et al. for the advantage of providing a data

processing system that can handle or transmit a number of signals of widely varying range (Ishikawa: col. 1, lines 5-8).

20. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayyem et al. (US Patent 6,290,839 B1) and Ishikawa (US Patent 3,619,511) as applied to claims 1-2, 5, 8-18, 20-30, 34, 37-44, and 49-61 above, and further in view of Roberts et al. (US Patent 5,958,791).

Kayyem et al. discloses an apparatus for electrical and electrochemical detection of molecular interactions in a sample solution (abstract; col. 2, line 26-36). The apparatus comprise of a supporting substrate (fig. 1C, ref. #30; col. 2, line 42), a plurality of porous, polymeric (conjugated polymer) pads (fig. 1C, ref. #25; col. 2, line 28-29 and 49-50; col. 8, line 41-54), and a set of electrodes in contact with a plurality of porous, polymeric pads (fig. 1 (A-D), ref. #10 and 20; col. 2, line 28-29 and 42-43; col. 8, line 31-41). The electrodes are arranged to address a subset of test sites (fig. 1 (A-F); col. 2, line 40-42). Each output electrode is in electrochemical contact with an input electrode (col. 2, line 33-37). The linker (ref. #106, fig. 3A) is in contact with the polymeric pads (ref. #107, fig. 3A) and the probe molecules (ref. #100, fig. 3A) immobilized to the linker (col. 3, line 1-5; col. 6, line 4-13 and 39-46; col. 65, line 50-57). The apparatus further comprise of a reference electrode, a means for producing an electrical signal, a means for detecting changes in the electrical signal (col. 65, line 66-67 and continue to col. 66, line 1-9), and an electrolyte solution in contact with the polymeric pads (col. 2, line 27-31; col. 11, line 1-2). The molecular interactions between the immobilized probe molecules and target molecules are detected (col. 1, line 61-67 and continue to col. 2, line 1-2). The preferred electrodes are known in the art and include gold and platinum, which are known as conductive

material (col. 8, line 7-17). It is also known in the art that electrodes are also comprise of an insulating material such as glass and the insulating material is the supporting substrate (col. 58, line 6-13; fig. 1 (A-E), ref. #30). The probe molecules are nucleic acids or peptides (col. 23, line 66-67 and continue to col. 24, line 1-5 and 26-65). The probes are covalently attached to the electrode by a variety of ways (col. 21, line 26-29).

Ishikawa disclosed "[a] data handling system for effecting normalization of a number of signals of widely variable range, including a multiplexer that samples signals and a single gain control amplifier for normalizing the signals and operating upon the sampled input signals to provide signals of optimum magnitude" (col. 1, lines 35-51). "[T]he normalized signals are then fed through a decoder or demultiplexer which is synchronized with the input multiplexer whereby the original input signals are readily available in normalized form." It is well known the output of the multiplexer provides each of the input signals in sequence on a single line (input electrodes) and these sequential or multiplexed input signals are fed to a gain control circuit from whence the output is fed to a decoder or demultiplexer which provides on lines (output electrodes) the outputs of the system in the form of normalized versions of inputs (col. 2, lines 27-33).

The apparatus Kayyem et al. as modified by Ishikawa does not expressly disclose that it includes an interdigitated output and input electrodes.

Roberts et al. discloses an apparatus that the output and input electrodes are interdigitated (Abstract; col. 6, line 10-13; col. 7, line 66-67 and continue to col. 8, line 1). Roberts et al. also teach that the reference electrode is comprised of silver/silver chloride (col. 23, line 17-18 and claims 15 and 40). The support substrate comprises ceramic (col. 18, line 12-20).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include an interdigitated output and input electrodes as taught by Roberts et al. in the apparatus of Kayyem et al. as modified by Ishikawa. One of ordinary skill in the art would have been motivated to include an interdigitated output and input electrodes in the apparatus of Kayyem et al. as modified by Ishikawa for the advantage of increasing signal detection such as increasing signal-to-noise ratio and decreasing ohmic signal losses (col. 8, line 2-10). The feature of interdigitation of the microelectrodes constitutes obvious variations in parameters that are routinely modified in the art. The art has shown that microelectrodes fabricated in an interdigitated array have inherent advantages in signal detection over more conventional electrode configurations (Robert: col. 8, line 2-37).

Response to Arguments

21. Applicant's arguments with respect to claims 1-80 have been considered but are moot in view of the new ground(s) of rejection and cancellation of claims 6-7, 19, 31-33, 35-36, 45-48, 62-63, 69-73, and 76-80.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to My-Chau T. Tran whose telephone number is 703-305-6999. The examiner is on ***Increased Flex Schedule*** and can normally be reached on Monday: 8:00-2:30; Tuesday-Thursday: 7:30-5:00; Friday: 8:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew J. Wang can be reached on 703-306-3217. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1123.

mct
July 26, 2003

PADMASHRI PONNALURI
PRIMARY EXAMINER